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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,185	04/15/2004	Steven M. Zuniga	2834C2-303003	9780
26185 7590 03/23/2007 FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER CULBERT, ROBERTS P	
			ART UNIT	PAPER NUMBER
			1763	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/23/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,185	ZUNIGA ET AL.	
	Examiner	Art Unit	
	Roberts Culbert	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/2/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5, 7-10 12, 13, 15, 17, 20, 22-25 and 27-31 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 5,948,204 to Maveety et al.

Regarding Claim 1, Maveety et al. teach a method of polishing comprising holding a substrate on a substrate mounting surface that is vertically movable relative to a base rigid base of a carrier head in a chemical mechanical polishing apparatus; bringing the substrate into contact with a polishing surface; creating relative motion between the polishing surface and the substrate; and maintaining the substrate beneath the substrate mounting surface with a retaining ring that includes a generally annular lower portion having a bottom surface for contacting the polishing surface during polishing, and a generally annular upper portion having a bottom surface joined to the lower portion and a top surface fixed to and abutting the base, and wherein the lower portion is made of a plastic and the upper lower portion is made of a metal which is more rigid than the plastic.

Regarding Claim 17, Maveety et al. teach a method of assembling a retaining ring, comprising: securing a generally annular lower portion made of a plastic and having a bottom surface for contacting a polishing pad during polishing to a bottom surface of a generally annular upper portion made of a metal

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which is more rigid than the plastic and having a top surface configured to be mechanically affixed to and abut a rigid base of a carrier head.

Regarding Claim 29, Maveety et al. teach a method of assembling a carrier head, comprising: securing a top surface of an upper portion of a retaining ring to be affixed to and abut a rigid base of the carrier head, wherein the retaining ring includes a generally annular lower portion made of a plastic and having a bottom surface for contacting a polishing pad during polishing, and wherein the upper portion is made of a metal which is more rigid than the plastic and includes a bottom surface joined to the lower portion.

Regarding Claim 2, Maveety et al. teach dispensing slurry onto the polishing surface is conventional in the polishing art. (C1 L33-35)

Regarding Claim 3, Maveety et al. teach applying a load from the mounting surface to press the substrate against the polishing surface. (C1, L45-50)

Regarding Claim 5, Maveety et al. teach creating relative motion by rotating the polishing surface. (C1, L30-35)

Regarding Claims 7 and 22, Maveety et al. teach a plastic substantially inert to a chemical mechanical polishing process. (C3, L9-19)

Regarding Claims 8 and 23, Maveety et al. illustrate a lower portion that is thicker than a substrate.

Regarding Claims 9 and 24, Maveety et al. teach the lower portion is about 100-400 mils thick. (C3, L29-32)

Regarding Claims 10 and 25, Maveety et al. teach the plastic is selected from the group consisting of: polyphenylene sulfide, polyethylene terephthalate, polyetheretherketone, and polybutylene terephthalate. (C3, L9-14)

Regarding Claims 12 and 27, Maveety et al. teach the metal is stainless steel.

Regarding Claims 13 and 28, Maveety et al. teach plastics having an elastic modulus about ten to one hundred times the elastic modulus of the metal.

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Regarding Claims 15 and 20, Maveety et al. teach attaching the lower portion to the upper portion with screws.

Regarding Claim 30, Maveety et al. teach securing a substrate backing assembly to the rigid base so that a substrate-receiving surface of the substrate backing assembly is vertically movable relative to the rigid base.

Regarding Claim 31, Maveety et al. teach securing the substrate backing assembly to the rigid base includes clamping a flexure in the substrate backing assembly between the rigid base and the retaining ring.

Claims 1-8, 12, 13, 15-17, 20-23 and 27-31 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 747 167 A2 to Shendon et al.

Regarding Claim 1, Shendon et al. teach a method of polishing comprising holding a substrate on a substrate mounting surface that is vertically movable relative to a base rigid base of a carrier head in a chemical mechanical polishing apparatus; bringing the substrate into contact with a polishing surface; creating relative motion between the polishing surface and the substrate; and maintaining the substrate beneath the substrate mounting surface with a retaining ring that includes a generally annular lower portion having a bottom surface for contacting the polishing surface during polishing, and a generally annular upper portion having a bottom surface joined to the lower portion and a top surface fixed to and abutting the base, and wherein the lower portion is made of a plastic and the upper lower portion is made of a metal which is more rigid than the plastic.

Regarding Claim 17, Shendon et al. teach a method of assembling a retaining ring, comprising: securing a generally annular lower portion made of a plastic and having a bottom surface for contacting a polishing pad during polishing to a bottom surface of a generally annular upper portion made of a metal which is more rigid than the plastic and having a top surface configured to be mechanically affixed to and abut a rigid base of a carrier head.

Regarding Claim 29, Shendon et al. teach a method of assembling a carrier head, comprising: securing a top surface of an upper portion of a retaining ring to be affixed to and abut a rigid base of the

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carrier head, wherein the retaining ring includes a generally annular lower portion made of a plastic and having a bottom surface for contacting a polishing pad during polishing, and wherein the upper portion is made of a metal which is more rigid than the plastic and includes a bottom surface joined to the lower portion.

Regarding Claim 2, Shendon et al. teach dispensing slurry onto the polishing surface is conventional in the polishing art. (C1 L22-26)

Regarding Claim 3, Shendon et al. teach applying a load from the mounting surface to press the substrate against the polishing surface.

Regarding Claim 4, Shendon et al. teach applying a load includes pressurizing a chamber in the carrier between the substrate mounting surface and the base

Regarding Claim 5, Shendon et al. teach creating relative motion by rotating the polishing surface. (C1, L30-35)

Regarding Claim 6, Shendon et al. teach creating relative motion by rotating the carrier head. (C1, L42-47)

Regarding Claims 7 and 22, Shendon et al. teach a plastic (Delrin) substantially inert to a chemical mechanical polishing process.

Regarding Claims 8 and 23, Shendon et al. illustrate a lower portion that is thicker than a substrate.

Regarding Claims 12 and 27, Shendon et al. teach the metal is aluminum. (C10, L35)

Regarding Claims 13 and 28, Shendon et al. teach a plastic (Delrin) having an elastic modulus about ten to one hundred times the elastic modulus of the metal.

Regarding Claims 15 and 20, Shendon et al. teach attaching the lower portion to the upper portion with screws. (C10, L29-32)

Regarding Claims 16 and 21, Shendon et al. teach alternatively attaching the lower portion to the upper portion by press fitting. (C11, L17-21)

Regarding Claim 30, Shendon et al. teach securing a substrate backing assembly to the rigid base so that a substrate-receiving surface of the substrate backing assembly is vertically movable relative

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to the rigid base.

Regarding Claim 31, Shendon et al. teach securing the substrate backing assembly to the rigid base includes clamping a flexure in the substrate backing assembly between the rigid base and the retaining ring.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent 5,948,204 to Maveety et al.

Maveety et al. does not expressly teach the plastic is polyphenylene sulfide. However, Maveety teaches the plastic may preferably be a soft material having a Rockwell Hardness value between 90-150. Maveety further teaches that other materials having the desirable properties may be substituted. Thus one of ordinary skill in the art would have found it obvious to use other materials having the recited properties. Note that Polyphenylene sulfide is well known in the materials art to have a suitable Rockwell hardness value, elasticity, wear and chemical resistance.

Claims 9-11, 14, 18 19 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 747 167 A2 to Shendon et al.

Regarding Claims 14, 18 and 19, Shendon et al. does not expressly teach attaching with an adhesive such as an epoxy. However, Shendon et al. teach that the plastic ring may be mounted without screws in order to prevent the heads of the screws from coming into contact with the polishing pad and introducing contaminants. Further, as recognized by one of ordinary skill in the art, an epoxy is a well-

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known alternative means for attaching a plastic and metal workpiece. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use an epoxy to attach upper and lower portions in order to prevent the heads of the screws from coming into contact with the polishing pad and introducing contaminants as stated by Shendon et al.

Regarding Claims 10, 11, 25 and 26, Shendon et al. does not expressly teach the plastic is polyphenylene sulfide. However, Shendon et al teach that Delrin or similar plastic material may be used. Polyphenylene sulfide is well known in the art to have similar material properties such as hardness, elasticity, wear and chemical resistance to Delrin. Thus, It would have been obvious to one of ordinary skill in the art to use the similar plastics to Delrin as a matter of substituting equivalent plastic materials.

Regarding Claims 9 and 24, Shendon et al. does not expressly teach the lower portion is about 100-400 mils thick. However, it has been held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *In Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



R. Culbert
Examiner
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